



**FORT LEONARD WOOD, MO
NONCOMMISSIONED OFFICERS ACADEMY
SYLLABUS FOR 12T3O
ADVANCED LEADER COURSE**



TECHNICAL ENGINEER SUPERVISOR ALC

Purpose:

The 12T3O Technical Engineer Advanced Leader Course provides 12T Noncommissioned Officers with the technical and tactical skills required to successfully serve as Technical Engineer Squad Leaders. The course also enhances the student's ability to lead, train, and direct subordinates in all aspects of technical engineering.

Course Scope:

Students will demonstrate proficiency in how to Conduct a Technical Construction Analysis, Perform Soil Technician Supervisory Duties, Produce a Construction Site Design and Roadway Designs, Produce Technical Design Reports, Perform Technical Construction Management, Principles of Geodetic Management, and Supervise Aviation Survey.

Course Prerequisites:

Active Army or Reserve Component enlisted personnel selected by DA (Active Army) or recommended by unit Commander (Reserve Component). Qualified in MOS 12T. Meet requirements outlined in AR 350-1 (para 3-8) and DA Pam 611-21. All Soldiers must have successfully completed the Warrior Leader Course (WLC) at least six months before attending this course.



TECHNICAL ENGINEER SUPERVISOR ALC



Security Clearance: Unclassified

Course Length–Weeks: 9 **Days:** 1 **Hours:** 357.8

Class Sizes – Optimum: 12 **Minimum:** 4 **Maximum:** 12

Administrative Time:

Module: A / 001 28.0

Title: **Administrative**

Academic Time:

Module: B / 001 11.2

Title: **Shared Engineer Task**

Module: C / 001 222.6

Title: **Technical Training**

Module: D / 001 24.0

Title: **Mandatory Training**

Module: E / 001 72.0

Title: **Situational Training Exercise (STX)**



TECHNICAL ENGINEER SUPERVISOR ALC Administrative



Module:	A / 1		
Title:	Administrative		
Purpose:	The purpose of this module is to get Soldiers inprocessed, settled in and making sure all required administrative documents are completed and all necessary references, training aids are issued to each student.		
Remarks:	None	Technique(s) of Delivery:	<u>Hours</u>
		Small Group Instruction (SGI) (SG)	28.0

Security Clearance: Unclassified



TECHNICAL ENGINEER SUPERVISOR ALC

Shared Engineer Tasks



Module: B / 1
Title: Shared Engineer Tasks
Purpose: The purpose of this module is to train Technical Engineer Squad Leaders on preparing for an Improvised Explosive Device (IED) threat prior to movement as well as conducting an IED threat analysis. It also discusses the troop-leading procedures and the Supervise Infrastructure Reconnaissance (SWEAT).

Remarks: None	Technique(s) of Delivery:	Hours
	Small Group Instruction (SGI) (SG)	11.2

Security Clearance: Unclassified

Lesson Title: Prepare for Improvised Explosive Device Threats Prior to Movement

References: FM 3-34.210 Explosive Hazards Operations

Lesson Title: React to an Improvised Explosive Device (IED) Attack

References: FM 4-30.51 Unexploded Ordnance (UXO) Procedures

Lesson Title: Supervise Infrastructure Reconnaissance (SWEAT)

References: TC 9-21-01 Soldiers IED Awareness Guide Iraq & Afghanistan



TECHNICAL ENGINEER SUPERVISOR ALC

Conduct Technical Construction Analysis



Module: C01 / 1

Title: Conduct Technical Construction Analysis

Purpose: This module provides instruction on how to establish project information for a proposed construction site as well as how to produce a pre-construction site analysis report for a construction site. It also discusses how to identify and determine uses of rock as well as how to identify surficial features of geology found on a map. The Module concludes with a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

22.8

Security Clearance: Unclassified

Lesson Title: The Army Records Information Management System (ARIMS)

References: AR 25-400-2 The Army Records Information Management System (**all**)

Lesson Title: Establish Project Information

References: FM 5-412 Project Management (Chapter **1**)

Lesson Title: The A / E / C CADD Standards

References: ERDC/ITL TR-09-2 A / E / C CAD Standards (**all**)

Lesson Title: Identify and Determine Uses of Rock

References: FM 5-410 Military Soils Engineering (Chapters **1** & **5**)

Lesson Title: Identify Surficial Features of Geology

References: FM 5-410 Military Soils Engineering (Chapter **3**)



TECHNICAL ENGINEER SUPERVISOR ALC

Perform Soil Technician Supervisory Duties



Module: C02 / 1

Title: Perform Soil Technician Supervisory Duties

Purpose: This module provides instruction on how to design a concrete mix as well as discusses how to determine the California Bearing Ratio (CBR). It also provides instruction on determining soil stabilization using the required field sheets (DD Forms: 1206, 1207, 1208, 1209, 1794, and 2463). The Module concludes with a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

26.6

Security Clearance: Unclassified

Lesson Title: Design Concrete Mix

References: FM 5-428 Concrete and Masonry (Chapters 2 & 3)

Lesson Title: California Bearing Ratio

References: FM 5-472 Materials Testing (Chapter 2 Section IX & Appendix B)

Lesson Title: Determine Soil Stabilization

References: FM 5-410 Military Soils Engineering (Chapters 6 & 9)

FM 5-430-00-1 Planning and Design of Roads, Airfields, and Heliports
in the Theater of Operations – Road Design



TECHNICAL ENGINEER SUPERVISOR ALC

Produce a Construction Site Design



Module: C03 / 1

Title: Produce a Construction Site Design

Purpose: This module provides instruction on how to produce a construction site design utilizing Terramodel software. It also discusses how to ensure all features, dimensions, and notes are accurate according to the design sketch, the specifications, and A/E/C CADD Standards. The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

42.5

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals



TECHNICAL ENGINEER SUPERVISOR ALC

Prepare Roadway Designs



Module: C04 / 1

Title: Prepare Roadway Designs

Purpose: This module provides instruction on how to select routes for proposed roads, horizontal & vertical curve restrictions, grade line & drainage requirements. It also discusses how to emplace the appropriate culvert to allow for proper flow of drainage. The Module concludes with a hands on evaluation test utilizing Terramodel software as well as a written examination..

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

38.5

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals

Lesson Title: Design and Draw the Roadway (Design Roads Steps)

References: FM 5-430-00-1 Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations – Road Design (Chapters **9** & **11**)

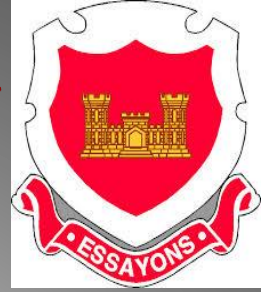
Lesson Title: Determine Drainage Requirements

References: FM 5-430-00-1 Planning and Design of Roads, Airfields, and Heliports in the Theater of Operations – Road Design (Chapter **6**)



TECHNICAL ENGINEER SUPERVISOR ALC

Produce Technical Design Reports



Module: C05 / 1

Title: Produce Technical Design Reports

Purpose: This module provides instruction on how to produce a soils technical report and survey data report. It also discusses how to accurately fill out all required technical design reports utilizing the Automated Sheet Assembly Program (ASAP) utilizing the Terramodel software. The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

17.3

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals

Lesson Title: Write a Soils Technical Report

References: FM 5-472 Materials Testing (Chapter 2, Section X)

Lesson Title: Horizontal & Vertical Reports

References: FM 5-412 Project Management (Chapter 1)

Lesson Title: Automated Sheet Assembly Program (ASAP) Steps

References: Terramodel Manuals



TECHNICAL ENGINEER SUPERVISOR ALC



Perform Technical

Construction Management

Module: C06 / 1

Title: Perform Technical Construction Management

Purpose: This module provides instruction on technical equipment maintenance as well as producing a bill of materials (BOM) list. It also discusses how to properly do a work schedule and inspection of a construction site. The Module concludes with a hands on evaluation test and a written examination.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

39.5

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals

Lesson Title: Terramodel

References: Terramodel Manual

Lesson Title: Terramodel

References: Terramodel Manual



TECHNICAL ENGINEER SUPERVISOR ALC

Principles of Geodetic Management



Module: C07 / 1

Title: Principles of Geodetic Management

Purpose: This module provides instruction on how to produce a construction site design utilizing Terramodel software. It also discusses how to ensure all features, dimensions, and notes are accurate according to the design sketch, the specifications, and A/E/C CADD Standards. The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

13.4

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals



TECHNICAL ENGINEER SUPERVISOR ALC

Supervise Aviation Survey



Module: C08 / 1

Title: Supervise Aviation Survey

Purpose: This module provides instruction on how to produce a construction site design utilizing Terramodel software. It also discusses how to ensure all features, dimensions, and notes are accurate according to the design sketch, the specifications, and A/E/C CADD Standards. The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

22.0

Security Clearance: Unclassified

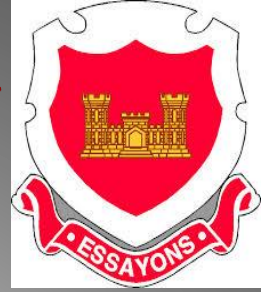
Lesson Title: Terramodel

References: Terramodel Manuals



TECHNICAL ENGINEER SUPERVISOR ALC

Supervise Aviation Survey



Module: D / 1

Title: Mandatory Training

Purpose: This module provides instruction on the Engineer branch history, Battle Focus Training, cultural awareness of the middle east as well as the Army's Sexual Harassment and Assault Response and Prevention (SHARP) Program. It also discusses how to conduct IPB in a counter sniper operation and environment, as well as personnel recovery and operation security (OPSEC). The Module concludes with a hands on evaluation test.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

24.0

Security Clearance: Unclassified

Lesson Title: Terramodel

References: Terramodel Manuals



TECHNICAL ENGINEER SUPERVISOR ALC

Situational Training Exercise



Module: E / 1

Title: Situational Training Exercise (STX)

Purpose: This module provides the students to incorporate everything they have learned throughout the course. In addition, it is the culminating event that allows for students to work on their tactical leadership skills to include their technical skills as well. The Module concludes with a performance evaluation on leadership in a tactical environment.

Remarks: None

Technique(s) of Delivery:

Small Group Instruction (SGI) (SG)

Hours

72.0

Security Clearance: Unclassified



TECHNICAL ENGINEER SUPERVISOR ALC



Written Examinations

Conduct Technical Construction Analysis

Soil Technician Supervisory Duties

Drainage

Principles of Geodetics Management (Part I)

Survey Control Specifications (Part II)

Hands-on Examinations

Site Adapt (Design)

Road Designs

Materials Take-Off

Evaluations

APFT

PRT Instruction

Operational Environment Brief

Student Led Discussion

Oral Engineer History Brief

In Ranks Inspection

Tactical Leadership

APA Essay

Memorandum for Record

Formal Memorandum